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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/624,257	07/21/2003	Leonard N. Schiff	020575	7349

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EXAMINER	
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ART UNIT	PAPER NUMBER
2618	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/624,257	SCHIFF ET AL.	
	Examiner	Art Unit	
	Bobbak Safaipour	2618	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 April 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

This Action is in response to Applicant's response filed on 4/5/2007. **Claims 1-30** are still pending in the present application. **This action is made FINAL.**

Response to Arguments

Applicant's arguments with respect to independent **claims 1, 7, 18, 22, and 27-30** have been fully considered but they are not persuasive.

Regarding independent **claim 1**, Applicant essentially argues that Rouffet et al (hereinafter "Rouffet"; US 5,410,731) in view of Farrell (EP 1 065 806) fails to teach a system where m primary satellites project N/m beams across an area to create N beam spots. Applicant argues that, regarding Rouffet's Fig. 1, then m (the number of primary satellites) = 2, and N (beam spots covering the area) = 2. In Rouffet's system N/m = 2/2 = 1, meaning that each satellite projects 1 beam. However, each of Rouffet's satellites project 2 beams, not 1.

Examiner respectfully disagrees. Taking a closer look at Rouffet's Fig. 1, Rouffet discloses a system where m primary satellites project N/m beams across an area to create N beam spots. Rouffet's Fig. 1 discloses 2 satellites, S1 and S2; therefore, m (the number of primary satellites) = 2, and N (beam spots collectively covering the area) = 4. Satellite S1 transmits 2 beams, F1 and F2. Satellite S2 transmits 2 beams, F'1 and F'2. Two beams, F1 of satellite S1 and F'1 of satellite S2, cover the area T1 of the Earth. In other words, two beam spots are covering the area of T1. Also, two beams, F2 of satellite S1 and F'2 of satellite S2, cover the area T2 of the Earth. In other words, two beam spots are covering the area of T2. Therefore, Rouffet's Fig. 1 discloses collectively creating 4 beam spots covering the areas of T1 and T2. In

Rouffet's system N/m = 4/2 = 2, meaning that each satellite projects 2 beams. This is clearly shown in Rouffet's Fig. 1.

Furthermore, Applicant argues that a *prima facie* case of obviousness has not been supported. With respect to the first *prima facie* requirement, Applicant argues that the motivation provided by the Examiner does not explain how an expert in the art could have modified the Rouffet reference in such a way as to describe the claimed invention. With respect to the second *prima facie* requirement, Applicant argues that even if an expert were given the Rouffet and Farrell inventions as a foundation, no evidence has been provided to show that there is a reasonable expectation of success in the claimed invention. With respect to the third *prima facie* requirement, Applicant argues that even if, for the sake of argument, Farrell does disclose back up satellites, the combination of Farrell and Rouffet does not explicitly disclose every limitation recited in the claim.

Examiner respectfully disagrees. Farrell clearly shows and discloses that "it is desirable to provide a replacement satellite (i.e. a spare or back-up satellite) that can assume the telecommunications functions of a failed satellite." (paragraph 6, lines 15-18) This is also disclosed in the Applicant's invention, on page 3, paragraph 13, under "Summary of the Invention" that "each of the *n* back-up satellites may be selectively configured, on demand as desired, to replace a failed one of the *m* primary satellites." Furthermore, Farrell discloses that the "replacement satellite will typically be designed for the same uplink and downlink frequency plans, power levels, footprints, telemetry and command subsystem frequencies, etc. as of the satellite for which it is designed to be the spare." (paragraph 6, lines 22-26) Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate

the back-up satellites of Farrell into the primary satellites of Rouffet to have practical but satisfactory replacement satellites that can emulate the performance of primary satellites while still being technologically, economically, and otherwise practically. (paragraph 11, lines 28-37)

Independent **claims 18 and 27-30** include the limitations of claim 1; therefore, the previous rejection still applies.

Independent **claims 7 and 24** include the limitations of claim 1 and also include the limitation of the beam sub-areas being separated by one beam width. Applicant essentially argues that Rouffet fails to disclose that each sub-area covered by a beam spot is separated from another sub-area covered by another beam spot by one beam width.

The Examiner respectfully disagrees. Due to the broadness of the limitation, it is unclear to the Examiner whether the separation of the sub-areas are separated by one beam width or the other sub-area covered by another beam spot has a width of one beam width. Taking a closer look at Fig. 2 of the Applicant's disclosure, each of the beams is separated by "1 beam width" as indicated on the figure. Using this same philosophy as shown on Fig. 2 of the Applicant's disclosure, area T1 and area T2 of Rouffet's Fig. 2 are separated by one beam width. The recited claim language is given the broadest reasonable interpretation; therefore, Rouffet discloses that each sub-area covered by a beam spot is separated from another sup-area covered by another beam spot by one beam width.

Dependent **claim 11**, which depends on independent claim 7, is rejected with respect to Rouffet, in view of Farrell, and further in view of Faineant et al (hereinafter "Faineant"; US

2002/0089943). Applicant essentially argues that a *prima facie* case of obviousness has not been supported.

Examiner respectfully disagrees. Rouffet, in view of Farrell, discloses all of the claimed limitations (as indicated above) except for the limitations of claim 11. However, Faineant does disclose a satellite communication system that facilitates Internet access by user terminals. (Fig. 4, paragraph 74; Two satellite terminals connected to user terminals, a satellite and an Internet service provider) Farrell, Faineant, and Rouffet, when combined, do disclose all of the limitations. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teachings of Faineant into the teachings of Rouffet and Faineant to be able to send information via the Internet through satellite communications and also to integrate satellite networks offering facilities for transactions in accordance with the Internet Protocol transparently into terrestrial networks so that users can reach all Internet addresses on the world wide web, to send as well as to receive data, without concerning themselves about the path taken by the data packets to provide the transmission, and can thereby benefit from all Internet services already available on terrestrial networks. (paragraph 9)

Regarding independent **claim 22,** Applicant essentially argues that Rouffet, in view of Chandler (US 6,219,003) fails to disclose the limitation of a satellite that projects N/m beams onto an area, or beam sub-areas separated by one beam width. The Examiner respectfully disagrees. (See arguments above)

Applicant's arguments with respect to amended independent **claims 12, 24 and 26** have been considered but are moot in view of the new ground(s) of rejection.

Applicant's arguments with respect to dependent **claims 15-17**, as **applied to independent claim 12,** have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out

the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-10, 12-14, 18-21, and 24-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rouffet et al (United States Patent #5,410,731)** in view of **Farrell (European Patent Application EP 1 065 806 A2).**

Consider **claim 1,** Rouffet et show and disclose a satellite communication system comprising *m* primary satellites, each equipped to project *N/m* beams onto an area, to collectively create *N* beam spots to cover the area, *m* being an integer greater than 1 (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2.).

Rouffet et al fail to disclose *n* back up satellites, each equipped to project *N/m* beams onto the area, to enable each of the *n* back up satellites to be able to replace any one of the *m* primary satellites on demand, *n* being an integer equal to or greater than 1.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates

the communications performance of a substantial percentage of existing geostationary communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Consider **claim** 7, Rouffet et al show and disclose a satellite communication system comprising *m* primary satellites, each equipped to project *N/m* beams onto and across an area in a loosely-packed array manner to collectively create *N* beam spots to cover the area, with each sub-area covered by a beam spot separated from another sub-area covered by another beam spot by one beam width, *m* being an integer greater than 1 (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; col. 5, lines 4-14; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2. Furthermore, beam F1 will carry two transmission channels to area T1, beam F2 will carry three transmission channels to area T2, beam F'1 will carry three transmission channels to area T1, and beam F'2 will carry two transmission channels to area T2.).

Rouffet et al fail to disclose *n* back up satellites, each also equipped to project *N/m* beams onto and across the area in a loosely-packed array manner, with each sub-area covered by a beam spot separated from another sub-area covered by another beam spot by one beam width, to enable a selected one of the *n* back up satellites to replace any one of the m primary satellites on demand, *n* being an integer equal to or greater than 1.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates the communications performance of a substantial percentage of existing geostationary communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55). Furthermore, Farrell discloses that the replacement satellite comprises two or more Ku and 2 or more C band downlink antennas, each antenna capable of outputting a downlink beam comprising downlink Ku and C band signals, respectively, with each downlink beam being separately directable to different locations on Earth (col. 4, lines 14-19 and 33-37).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Consider **claim 12**, Rouffet et al show and disclose a satellite communication system comprising *m* primary multi-beam satellites to facilitate communication (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; col. 5, lines 4-14; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently

retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2. Furthermore, beam F1 will carry two transmission channels to area T1, beam F2 will carry three transmission channels to area T2, beam F'1 will carry three transmission channels to area T1, and beam F'2 will carry two transmission channels to area T2.), but fail to show that the *m* primary multi-beam satellites and *n* back up multi-beam satellites are each equipped to facilitate communication on 1 of *m* and 1 of *n* bands of frequencies, *m and n* being an integer equal to or greater than 1.

However, Farrell shows and discloses as known in the art *m* primary multi-beam satellites and *n* back up multi-beam satellites are each equipped to facilitate communication on 1 of *m* and 1 of *n* bands of frequencies, *m* and *n* being an integer equal to or greater than 1. (paragraphs 12-17)

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have practical but satisfactory replacement satellites that will typically be designed for the same uplink and downlink frequency plans, power levels, footprints, telemetry and command subsystem frequencies, etc. as of the satellite for which it is designed to be the spare and can emulate the performance of primary satellites while still being technologically, economically, and otherwise practically.

Consider **claim 18,** Rouffet et al show and disclose a satellite communication system comprising *m* primary satellites, each equipped to project *N/m* beams onto an area, *m* being an integer greater than 1 (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2.).

Rouffet et al fail to disclose *n* back up satellites, each equipped to project *N/m* beams onto the area, to enable a selected one of the *n* back up satellites to replace any one of the *m* primary satellites on demand, *n* being an integer equal to or greater than 1.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates the communications performance of a substantial percentage of existing geostationary communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Consider **claim 24**, Rouffet et al show and disclose a method for configuring each of *m* primary satellites to project *N/m* beams onto and across an area in a loosely-packed array manner to collectively create *N* beam spots to cover the area, with each sub-area covered by a beam spot separated from another sub-area covered by another beam spot by one beam width, *m* being an integer greater than 1. (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; col. 5, lines 4-14; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2. Furthermore, beam F1 will carry two transmission channels to area T1, beam F2 will carry three transmission channels to area T2, beam F'1 will carry three transmission channels to area T1, and beam F'2 will carry two transmission channels to area T2.).

Rouffet et al fail to disclose configuring each of the m primary satellites to facilitate communication on 1 of *m* band of frequencies.

In related art, Farrell discloses configuring each of the m primary satellites to facilitate communication on 1 of *m* band of frequencies. (paragraphs 12-17)

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have practical but satisfactory

replacement satellites that will typically be designed for the same uplink and downlink frequency plans, power levels, footprints, telemetry and command subsystem frequencies, etc. as of the satellite for which it is designed to be the spare and can emulate the performance of primary satellites while still being technologically, economically, and otherwise practically.

Consider **claim 26**, Rouffet et al disclose a method comprising configuring each of *m* primary multi-beam satellites to facilitate communication (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; col. 5, lines 4-14; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2. Furthermore, beam F1 will carry two transmission channels to area T1, beam F2 will carry three transmission channels to area T2, beam F'1 will carry three transmission channels to area T1, and beam F'2 will carry two transmission channels to area T2.), but fail to disclose that the *m* primary multi-beam satellites facilitate communication on 1 of m band of frequencies and configuring a selected one of *n* back up multi-beam satellites to facilitate communication on 1 of *m* band of frequencies, the 1 of *m* band of frequencies being the 1 of *m* band of frequencies previously employed by the replaced primary multi-beam satellite, n being an integer equal or greater than 1.

However, Farrell shows and discloses as known in the *m* primary multi-beam satellites facilitate communication on 1 of m band of frequencies and configuring a selected one of *n* back up multi-beam satellites to facilitate communication on 1 of *m* band of frequencies, the 1 of *m* band of frequencies being the 1 of *m* band of frequencies previously employed by the replaced primary multi-beam satellite, n being an integer equal or greater than 1. (paragraphs 12-17)

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have practical but satisfactory replacement satellites that will typically be designed for the same uplink and downlink frequency plans, power levels, footprints, telemetry and command subsystem frequencies, etc. as of the satellite for which it is designed to be the spare and can emulate the performance of primary satellites while still being technologically, economically, and otherwise practically.

Consider **claim 27,** Rouffet et show and disclose a method of configuring each of *m* primary satellites to project *N/m* beams onto and across an area (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2.).

Rouffet et al fail to disclose configuring on demand a selected one of *n* back up satellites to project *N/m* beams onto and across the area coincidence with one of the *m* primary satellites is configured to project its *N/m* beams onto and across an area, to replace the one primary satellite with the selected one of the *n* back up satellites, *n* being equal to or greater than 1.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates the communications performance of a substantial percentage of existing geostationary communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Consider **claim 28,** Rouffet et show and disclose a gateway for communicating signals through a satellite communication system comprising means for transferring signals through *m* primary satellites, each equipped to project *N/m* beams onto an area, *m* being an integer greater than 1 (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a

transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2.).

Rouffet et al fail to disclose a gateway for communicating signals through a satellite communication system comprising means for transferring signals through *n* back up satellites, each equipped to project *N/m* beams onto the area, to enable a selected one of the *n* back up satellites to replace any one of the *m* primary satellites on demand, *n* being an integer equal to or greater than 1.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates the communications performance of a substantial percentage of existing geostationary communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Consider **claim 29,** Rouffet et show and disclose a user terminal for communicating signals through a satellite communication system to at least one gateway comprising means for transferring signals through *m* primary satellites, each equipped to project *N/m* beams onto an area, *m* being an integer greater than 1 (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of

satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2.).

Rouffet et al fail to disclose a user terminal for communicating signals through a satellite communication system to at least one gateway comprising means for transferring signals through *n* back up satellites, each equipped to project *N/m* beams onto the area, to enable a selected one of the *n* back up satellites to replace any one of the *m* primary satellites on demand, *n* being an integer equal to or greater than 1.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates the communications performance of a substantial percentage of existing geostationary communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Consider **claim 30,** Rouffet et show and disclose an apparatus for use in a satellite communication system comprising means for configuring *m* primary multi-beam satellites to project *N/m* beams onto an area to collectively create *N* beam spots to cover the area, with *m*

being an integer greater than 1 (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2.).

Rouffet et al fail to disclose an apparatus for use in a satellite communication system comprising means for configuring a selected one of *n* back up multi-beam satellites to project *N/m* beams onto the area, to replace one primary satellite with the selected one of the *n* back up satellites, *n* being equal to or greater than 1.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates the communications performance of a substantial percentage of existing geostationary communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Consider **claim 2**, and **as applied to claim 1 above,** Rouffet et al show and disclose the claimed invention wherein said *m* primary satellites are equipped to project *N/m* beams onto and across an area in a loosely-packed array manner, with sub-areas covered by a beam spot separated from other sub-areas covered by another beam spot by one beam width, and each equipped to facilitate communication on 1 of *m* band of frequencies (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; col. 5, lines 4-14; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2. Furthermore, beam F1 will carry two transmission channels to area T1, beam F2 will carry three transmission channels to area T2, beam F'1 will carry three transmission channels to area T1, and beam F'2 will carry two transmission channels to area T2.).

Rouffet et al fail to disclose except for said *n* back up satellites are also equipped to project *N/m* beams onto and across the area in a loosely-packed array manner, with each sub-area covered by a beam spot separated from another sub-area covered by another beam spot by one beam width, and each equipped to facilitate communication on 1 of *m* band of frequencies.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates the communications performance of a substantial percentage of existing geostationary

communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55). Furthermore, Farrell discloses that the replacement satellite comprises two or more Ku and 2 or more C band downlink antennas, each antenna capable of outputting a downlink beam comprising downlink Ku and C band signals, respectively, with each downlink beam being separately directable to different locations on Earth (col. 4, lines 14-19 and 33-37). The replacement satellite will be designed for the same uplink and downlink frequency plans and telemetry and command subsystem frequencies (col. 2, lines 22-26).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Consider **claim 3**, and **as applied to claim 1 above**, Rouffet et al, as modified by Farrell, further disclose 3 primary satellites (fig. 3; col. 4, lines 60-65).

Consider **claim 4,** and **as applied to claim 1 above,** Rouffet et al discloses the claimed invention except for having 1 back up satellite.

However, Farrell discloses as known in the art discloses a replacement satellite (col. 9, lines 29-39).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al in order to provide a replacement satellite that can emulate the communications performance of geostationary communications satellites.

Consider **claim 5**, and **as applied to claim 1 above**, Rouffet et al, as modified by Farrell, further disclose the claimed invention wherein the area comprises a plurality of zones, each

having a peak demand at a different time period (figs. 1 and 2; col. 3, lines 5-20; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2).

Consider **claim 6**, and **as applied to claim 1 above,** Rouffet et al, as modified by Farrell, further disclose the claimed invention wherein the satellite communication system facilitates data access by user terminals (col. 1, lines 10-15; Satellite telecommunications facility applies to the field of direct television broadcasting to a plurality of geographical coverage areas.).

Consider **claim 8**, and **as applied to claim 7 above**, Rouffet et al, as modified by Farrell, further disclose 3 primary satellites (fig. 3; col. 4, lines 60-65).

Consider **claim 9,** and **as applied to claim 7 above,** Rouffet et al disclose the claimed invention except for having 1 back up satellite.

However, Farrell discloses as known in the art discloses a replacement satellite (col. 9, lines 29-39).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al in order to provide a replacement satellite that can emulate the communications performance of geostationary communications satellites.

Consider **claim 10**, and **as applied to claim 7 above**, Rouffet et al, as modified by Farrell, further disclose the claimed invention wherein the area comprises a plurality of zones, each having a peak demand at a different time period (figs. 1 and 2; col. 3, lines 5-20;

Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2).

Consider **claim 13**, and **as applied to claim 12 above**, Rouffet et al, as modified by Farrell, further disclose 3 primary multi-beam satellites (fig. 3; col. 4, lines 60-65).

Consider **claim 14, and as applied to claim 12 above,** Rouffet et al, as modified by Farrell, further disclose having 1 back up multi-beam satellites. (col. 9, lines 29-39)

Consider **claim 19**, and **as applied to claim 18 above**, Rouffet et al, as modified by Farrell, further disclose 3 primary satellites (fig. 3; col. 4, lines 60-65).

Consider **claim 20, and as applied to claim 18 above,** Rouffet et al discloses the claimed invention except for having 1 back up satellite.

However, Farrell discloses as known in the art discloses a replacement satellite (col. 9, lines 29-39).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al in order to provide a replacement satellite that can emulate the communications performance of geostationary communications satellites.

Consider **claim 21**, and **as applied to claim 18 above**, Rouffet et al, as modified by Farrell, further disclose the claimed invention wherein the area comprises a plurality of zones, each having a peak demand at a different time period (figs. 1 and 2; col. 3, lines 5-20; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses

each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2).

Consider **claim 25**, and **as applied to claim 24 above**, Rouffet et al disclose the claimed invention except for the method comprising configuring on demand a selected one of *n* back up satellites to project *N/m* beams onto and across the area in a loosely-packed array manner, with each sub-area covered by a beam spot separated from another sub-area covered by another beam spot by one beam width, to replace one of the *m* primary satellites with the selected one of the *n* back up satellites, n being equal to or greater than 1. Furthermore, Rouffet et al fail to disclose configuring the selected one of the *n* back up satellites to facilitate communication on 1 of *m* band of frequencies, the 1 of *m* band of frequencies being the 1 of *m* band of frequencies previously employed by the replaced primary satellite, *n* being an integer equal to or greater than 1.

However, Farrell shows and discloses as known in the art a universal replacement communications satellite designed for orbiting the Earth in a geostationary orbit which emulates the communications performance of a substantial percentage of existing geostationary communication satellites and therefore for which it can be a replacement (col. 3, lines 40-55). Furthermore, Farrell discloses that the replacement satellite comprises two or more Ku and 2 or more C band downlink antennas, each antenna capable of outputting a downlink beam comprising downlink Ku and C band signals, respectively, with each downlink beam being separately directable to different locations on Earth (col. 4, lines 14-19 and 33-37). The

replacement satellite will be designed for the same uplink and downlink frequency plans and telemetry and command subsystem frequencies (col. 2, lines 22-26).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Farrell into the system of Rouffet et al to have a practical but satisfactory replacement satellite that can emulate the performance of the main or primary satellites while still being technologically, economically, and other practicable.

Claims 11, 15, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rouffet et al (United States Patent #5,410,731)** in view of **Farrell (European Patent Application EP 1 065 806 A2)** in further view of **Faineant et al (United States Patent Application Publication #2002/0089943 A1).**

Consider **claim 11**, and **as applied to claim 7 above**, Rouffet et al, as modified by Farrell show and disclose the claimed invention except for wherein the satellite communication system facilitate Internet access by user terminals.

However, Faineant et al show and disclose two satellite terminals connected to user terminals, a satellite and an Internet service provider (fig. 4, paragraph 74).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Faineant et al into the system of Rouffet et al and Farrell in order for users to be able to send information via the Internet through satellite communications.

Consider **claim 15**, and **as applied to claim 12 above**, Rouffet et al, as modified by Farrell, show and disclose the claimed invention except for wherein the satellite communication system facilitate access by user terminals to a communication network.

However, Faineant et al show and disclose two satellite terminals connected to user terminals, a satellite and an Internet service provider (fig. 4, paragraph 74).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Faineant et al into the system of Rouffet et al and Farrell in order for users to be able to send information via the Internet through satellite communications.

Consider **claim 16**, and **as applied to claim 15 above**, Rouffet et al, as modified by Farrell, show and disclose the claimed invention except for wherein the satellite communication system comprises the Internet.

However, Faineant et al show and disclose two satellite terminals connected to user terminals, a satellite and an Internet service provider (fig. 4, paragraph 74).

Therefore, it would have been obvious of one of ordinary skill in the art to incorporate the teachings of Faineant et al into the system of Rouffet et al and Farrell in order for users to be able to send information via the Internet through satellite communications.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over **Rouffet et al (United States Patent #5,410,731)** in view of **Farrell (European Patent Application EP 1 065 806 A2)** in further view of **Faineant et al (United States Patent Application Publication #2002/0089943 A1)** in further view of **Stetson et al (United States Patent Application Publication #2002/0169669 A1).**

Consider **claim 17**, and **as applied to claim 15 above**, Rouffet et al, as modified by Farrell and Faineant et al, show and disclose the claimed invention except for wherein the communications network comprises an enterprise Intranet.

However, Stetson et al show and disclose connections between user devices that include intranets and satellite links or networks (paragraph 115).

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Stetson et al into the system of Rouffet et al, Farrell and Faineant in order for users to be able to send information via the Intranet through satellite links or networks.

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Rouffet et al (United States Patent #5,410,731)** in view of **Chandler (United States Patent #6,219,003 B1).**

Consider **claim 22**, Rouffet et al disclose a satellite communication system that projects N/m beams onto an area in a loosely-packed array manner, to contribute to covering N/m sub-areas of the area with m-1 other satellites, with each sub-area covered by a beam spot separated from another sub-area covered by another beam spot by one beam width. (figs. 1 and 2; col. 3, lines 5-20; col. 4, lines 60-65; col. 5, lines 4-14; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2. A third satellite S3 identical to the satellites S1 and S2 already in orbit, which is fed with a wave E3 by a transmission antenna 21 on the Earth and is capable of retransmitting two beams F"1 and F"2 towards area T1 and T2. Furthermore, beam F1 will carry two transmission channels to area T1,

beam F2 will carry three transmission channels to area T2, beam F'1 will carry three transmission channels to area T1, and beam F'2 will carry two transmission channels to area T2.).

Rouffet et al fail to disclose that the satellite comprises at least one transponder and an antenna system having a reflector and *N/m* feed horns, coupled to the transponder.

However, Chandler discloses as known in the art a that modern cellular communications employ satellite based links for relaying signals between different Earth based stations, wherein the satellite contains RF transponder systems that are capable of receiving and relaying signals from many different stations on Earth to other stations. A key component in that transponder system is the microwave transmitting (or receiving) antenna, which is a reflector antenna. A reflector antenna employs a microwave feed horn and a parabolic reflector. (col. 1, lines 11-26)

Therefore, it would have been obvious to one of ordinary skill in the art to incorporate the teachings of Chandler into the system of Rouffet et al to be able to efficiently communicate to an area on Earth.

Consider **claim 23**, and **as applied to claim 22 above**, Rouffet et al, as modified by Chandler, further disclose the claimed invention wherein the area comprises a plurality of zones, each having a peak demand at a different time period (figs. 1 and 2; col. 3, lines 5-20; Geostationary satellites S1 and S2 having two coverage areas T1 and T2 on two distinct accesses each being capable of subsequently retransmitting two distinct beams, wherein antenna 1 of satellite S1 retransmitting a beam F1 to the area T1 of the Earth, and a beam F2 to the area T2 of the Earth and antenna 2 of satellite S2 retransmitting a beam F'1 to the area T1, and a beam F'2 to the area T2).

Conclusion

10. Anzel (U.S. Patent # 5,020,746) disclose **Method for satellite station keeping.**

Pocha et al (U.S. Patent # 5,120,007) disclose **Geostationary satellite system.**

Berkowitz (U.S. Patent # 5,175,556) disclose **Spacecraft antenna pattern control system.**

Lenormand et al (U.S. Patent # 5,289,193) disclose **Reconfigurable transmission antenna.**

Takahashi et al (U.S. Patent # 5,297,134) disclose **Loop mode transmission system with bus mode backup.**

Mueller et al (U.S. Patent # 5,323,322) disclose **Networked differential GPS system.**

Cances et al (U.S. Patent # 5,355,138) disclose **Antenna beam coverage reconfiguration.**

Bishop (U.S. Patent # 5,523,997) disclose **Communication network with dynamic intraswitching.**

Sabourin et al (U.S. Patent # 5,563,880) disclose **Methods for managing and distributing payload instructions.**

Pizzicaroli et al (U.S. Patent # 5,813,634) disclose **Method for replacing failing satellites in a satellite communication system.**

Pond (U.S. Patent # 5,860,056) disclose **Satellite information update system.**

Chethik (U.S. Patent # 5,890,679) disclose **Medium earth orbit communication satellite system.**

Bond (U.S. Patent # 3,995,801) disclose **Method of storing spare satellites in orbit.**

Dondl (U.S. Patent # 4,502,051) disclose **Telecommunication system with satellites positioned in geostationary positional loops.**

Edridge (U.S. Patent # 4,688,259) disclose **Reconfigurable multiplexer.**

deSantis (U.S. Patent # 4,858,225) disclose **Variable bandwidth variable center-frequency multibeam satellite-switched router.**

Lenormand et al (U.S. Patent # 4,965,587) disclose **Antenna which is electronically reconfigurable in transmission.**

Dixon et al (EP 1014598 B1) disclose **Reconfigurable satellite for modifying predetermined characteristics of payload, with flexible antenna system and agile repeater for handling various uplink and downlink frequency plans.**

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any response to this Office Action should be **faxed to** (571) 273-8300 **or mailed to**:

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Hand-delivered responses should be brought to

Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Bobbak Safaipour whose telephone number is (571) 270-1092. The Examiner can normally be reached on Monday-Friday from 9:00am to 5:00pm.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Edan Orgad can be reached on (571) 272-7884. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

Bobbak Safaipour
B.S./bs

June 4, 2007

EDAN ORGAD
PRIMARY PATENT EXAMINER
6/6/07